Managed by Fermi Research Alliance, LLC for the U.S. Department of Energy Office of Science

Linux at Fermi Quarterly Meeting
Why SL7

Rennie Scott and Glenn Cooper

28 January 2015

What happened to force a reevaluation?

- **RH / CentOS Announcement - January 7, 2014**
  - Impact Evaluation (in re: Fermilab, CentOS, Red Hat, CERN)
    - Analyzed and developed scenarios based on known requirements and vendor information
  - Presented the scenarios to CS senior management
    - SL Team received action items
      - Produce a CERN/Fermilab joint statement on the future of SL
      - Query the various SL communities on the scenarios and their impact
  - Spring HEPiX 2014
    - CERN announced, without Fermilab consultation, that they would be moving to CentOS 7 in the future for their 2016 upgrades

What did we consider in making our decision?

- **Needed to re-evaluate all of the viable options**
  - Management Guidance
    - Evaluate options
      - Red Hat Enterprise Linux
      - CentOS
      - Scientific Linux
      - Others (Ubuntu, SUSE, etc)
  - Refine the requirements
    - Mission
    - Goals
    - Scope

Scientific Linux – New Mission Statement

- **Our Mission:**
  - Driven by Fermilab's scientific mission and focusing on the changing needs of experimental facilities, Scientific Linux should provide a world class environment for scientific computing needs.
- **Our Goals:**
  - Provide a stable, scalable, and extensible operating system for scientific computing
  - Support scientific research by providing methods and procedures for enabling the integration of scientific applications with the operating environment
  - Use the free exchange of ideas, designs, and implementations to prepare a computing platform for the next generation of scientific computing

Reasons to continue with Scientific Linux

- **CentOS presented a lot of uncertainties**
  - It was difficult to determine CentOS's ultimate goals and understand their timeline to a production infrastructure and how it would align with Fermilab's strategic goals
- **Tailored for Fermilab needs**
  - Packaged distribution of Fermilab security baseline
  - Current ability to distribute critical updates and site specific issues
  - Asset inventory reporting to CMDB via OCS inventory at install
  - While there are no technical hurdles that bar this from being done by another distribution, SLF at this time is the simplest, least effort intensive, and already in place, tested, and mature
- **More control**
- **Engineering expertise and Red Hat attention to bug reports**
- **The Scientific Linux brand is a Fermilab asset**

SL staff effort consideration

- **Current effort spent on building and distribution**
  - **Approximately 10% - 15% of 2 FTE's (3 distributions: 5, 6, 7)**
    - **Reduction achieved by multiyear improvement project(2012 – 2015)**
      - Optimize the infrastructure
      - Implement virtualization and configuration management
      - Build, simplify, and automate previously manual, irregular, and undocumented tasks
      - Document processes and implement database tools for distribution package tagging for future optimizations
      - Web site update integration for reduction in manual website information overhead
    - **Maintain SL/F5 and 6 through 2017 & 2020 respectively**
  - **Current other efforts**
    - User questions
    - Tooling and enhancements
    - Honing Linux expertise
    - Incidents and bug tracking
    - Administration
    - Projects

Further discussion of the decision

- Aren't we just duplicating work that's already being done?
  - Yes, SL in its current form is duplicating the rebuilding effort. That is why it needs to be envisioned to add focus and value to Fermilab and the HEP community
- Won't we save a lot of the effort of the SL team?
  - Not really, the time that the SL-team spends on "building" SL is only about 10 – 15% of their time. The rest is spent other engineering and project efforts that support the Fermilab SLF community
- CERN is doing it, shouldn't we also?
  - The Fermilab SL-team has always done the majority of the effort on SL. Fermilab and CERN have differences in infrastructure, computing organizational structure, and customers. SLF is tailored to Fermilab's environment
- Isn't CentOS better than SL since it's now a part of RedHat?
  - CentOS is separated from RedHat, RHEL, and it's infrastructure. They build from the exact same source as we do. They don't have any more insight or secret sauce into RedHat than we do. The binaries which are produced by SL and CentOS are equivalent.

What are we planning to add, or considering adding, in the future?

- **Tighter Fermilab Integration (2015 -)**
  - Central distribution hub for unified infrastructure initiatives
  - Scientific software and/or application configuration distribution
  - Conduit for operational tool distribution
    - Puppet (configuration Management)
    - Nagios (monitoring)
- **Easy site configurator tools for collaborator systems and functions**
- **SL quality assurance through "use case" testing and stakeholder notification as part of the release work flow (2015)**
- **SL ITIL Release management (in process)**
  - SNOW release integration
  - Production tree on-boarded to change management
  - ISO20K certification - completed

Supplemental Material

- Scientific Linux Website Architecture
- 2014 Scientific Linux Update
- SL/SLF Errata Build and Publishing Guide
- Summary of Findings on New Developments for Enterprise Linux
- SL/SLF Infrastructure - Continuity Procedures
- Scientific Linux Fermi - ITIL Release Management Documents
- Scientific Linux Fermi Configuration Baseline for GCE

Supplemental questions?